CLINICAL IMAGE

Gastric neuroendocrine tumor as a rare type of neoplasm in a kidney transplant recipient

Paulina Gołasa[1], Marcin Krzanowski[1], Przemysław Miarka[1], Krzysztof Okoń[2], Marek Kuźniewski[1], Katarzyna Krzanowska[1]

1 Department of Nephrology, Jagiellonian University Medical College, Kraków, Poland
2 Department of Clinical and Experimental Pathomorphology, Jagiellonian University Medical College, Kraków, Poland

Neuroendocrine neoplasms are rare tumors (2.89 to 6.98 cases per 100 000 people per year in the United States)1,2 originating from neuroendocrine cells (neural crest, neuroendocrine islets, and stem cells), with a rising incidence during several past decades. This type of tumors can be benign or malignant and may develop in various organs, particularly in the gastrointestinal and pulmonary systems.

One of their subtypes, gastric neuroendocrine tumors, account for 1 to 2 cases per 1 million persons per year and represent 8.7% of all gastrointestinal neuroendocrine tumors.3,4

They originate from enterochromaffin-like cells of the gastric mucosa or, less commonly, from other types of endocrine cells (that secrete serotonin, gastrin, or adrenocorticotropic hormone).4 Patients may develop symptoms of uncontrolled hormone secretion or caused by tumor invasion.

Prognosis and survival depend on the type of tumor. There is a classification distinguishing 4 tumor types, based on their histological and morphological characteristics and pathogenesis.4 Well-differentiated type I and II gastric neuroendocrine neoplasms are mostly benign tumors posing a low risk of malignancy, whereas type III neoplasm has a poor prognosis, and type IV neoplasm—an extremely poor prognosis with a mean survival time of several months.

We present a case of a 65-year-old female kidney transplant recipient treated with triple immunosuppressive therapy (prednisolone, cyclosporine, and mycophenolate mofetil), with end-stage renal disease of her own kidneys due to diabetic nephropathy, with hypertension, and a history of cytomegalovirus infection, who was incidentally diagnosed with asymptomatic neuroendocrine tumor of the gastric antrum 25 months after transplant. Routine endoscopy was performed and showed the granular, erythematous pattern of the mucous membrane in the antrum (FIGURE 1A and 1B). Features of low-grade neuroendocrine tumor were found on histopathological examination, with a mitotic index below 1 mitosis / 10 high-power fields, and 70% of the section volume was involved, with infiltrated margins of the specimen slice. Additionally, traits of chronic atrophic gastritis with intestinal metaplasia were detected (FIGURE 1C and 1D). The patient denied having any symptoms.

Correspondence to:
Katarzyna Krzanowska, MD, PhD, Department of Nephrology, Jagiellonian University Medical College, ul. Jakubowskiego 2, 30-688 Kraków, Poland, phone: +48 12 400 28 62, email: kasiajanda@op.pl
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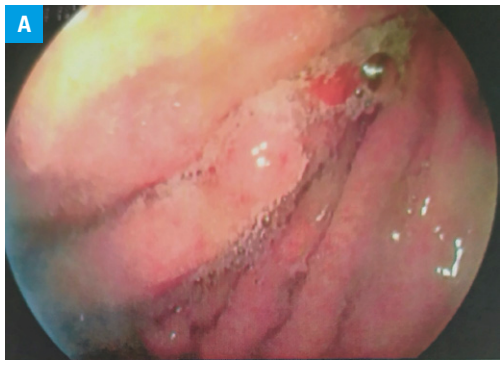

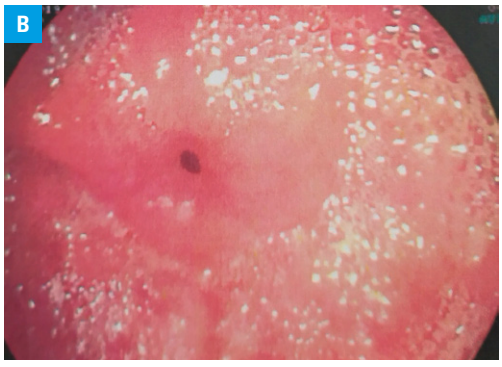

FIGURE 1 A, B – gastroscopy showing the granular, erythematous mucous membrane of the antrum

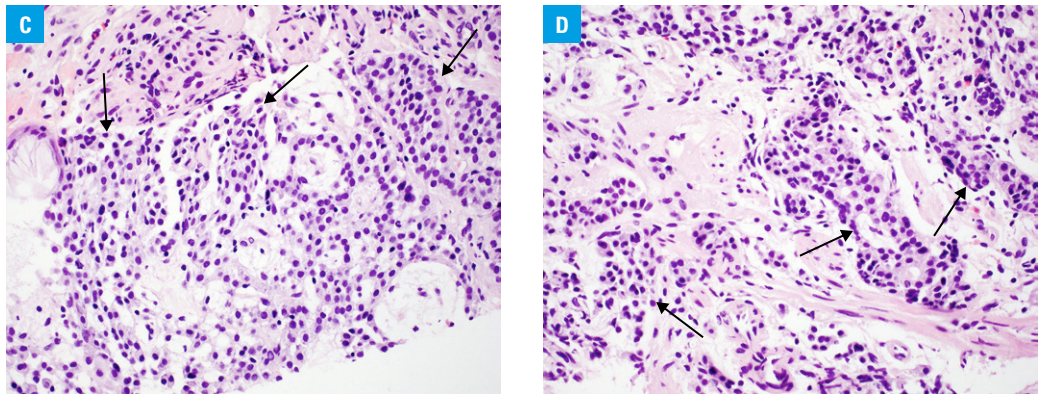

FIGURE 1 **C** – hematoxylin-eosin staining, magnification × 400: tumor cells forming cohesive nests (arrows). The nuclei are round or oval in shape and rather uniform, with finely dispersed chromatin. **D** – hematoxylin-eosin staining, magnification × 400: the lamina propria infiltrated by rather uniform neuroendocrine cells (arrows)

Previous endoscopy (performed 15 months earlier) demonstrated only erosive gastritis in the antrum and polyps in the stomach body.

After establishing the diagnosis, a modification of the immunosuppressive therapy was recommended, ie, a switch from the calcineurin inhibitor to an mTOR inhibitor, but the patient disagreed with the suggestion and the previous therapy was therefore continued.

Concurrently, the patient was referred to the endocrinology outpatient clinic. She underwent ^{99m}technetium sestamibi single-photon emission computed tomography of the abdomen and pelvis. No remarkable tracer concentration or increased tracer uptake were revealed. The case was discussed during a tumor board conference and a decision was made to closely monitor the patient.

Recent gastroscopy, performed 6 months after endoscopic tumor removal, showed signs of inactive chronic gastritis with foveolar hyperplasia in the antrum. No other abnormalities were detected.

This case is an interesting example of a very rare neoplasm developing in transplant recipients who are at increased risk of malignancies, but typically develop skin and renal malignancies or lymphomas. There are several cases of post-transplant neuroendocrine neoplasms, including mainly Merkel cell carcinoma or a single case of rectal neuroendocrine neoplasm.5 The presented case indicates the importance of accurate cancer screening in patients after organ transplants, as early detection makes it possible to implement proper treatment quickly—in this case, it was endoscopic tumor removal. In our clinical center, kidney transplant recipients have obligatory gastroscopy performed once a year and colonoscopy every 2 years or once a year in those with colon polyps. Close follow-up after cancer diagnosis is also crucial. However, the appropriate management of neuroendocrine neoplasms remains a challenge, as there are only scarce data available on this issue.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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